In the Claims

1. (Original) An analytical chip for the simultaneous determination of one or more different bacterial 16S-rRNA in a liquid sample

comprising

- an evanescent field measurement platform, e.g. an optical waveguide, as a solid carrier and
- a plurality of specific recognition elements immobilized in discrete measurement areas of known location forming an array of measurement areas on said evanescent field measurement platform,

wherein

- a multitude (i.e. 2 or more) of different specific recognition elements is immobilized in discrete measurement areas for the recognition and detection of each different 16S-rRNA, different recognition elements being specific for different subsequences of the 16S-rRNA to be detected, which are not directly adjacent and not overlapping in the sequence of said 16S-rRNA, and

and said analytical chip is operable for the detection of 16S-rRNA in the evanescent field of the evanescent field measurement platform, without an amplification (e.g. by polymerase chain reaction PCR or linear amplification "T7") of the polynucleotide sequences contained in the sample.

2. (Currently Amended) An analytical chip according to claim 1, wherein said analytical chip is operable for a simultaneous quantitative determination of one or more different bacterial 16S-rRNA in a liquid sample, ~~i.e. with an experimental variation of less than 50 %, preferably of less than 20 %, most preferably of less than 10 %.~~

3. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 2~~, wherein said analytical chip is operable for a simultaneous quantitative determination of the amount respectively concentration of the one or more different bacteria in the original

sample from where the liquid sample containing said one or more different 16S-rRNA have been derived.

4. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 3~~, wherein the one or more bacterial 16S-rRNA to be detected are derived from bacteria selected from the group comprising, e.g.:

Genus	**Species**
Achromobacter	xylosoxidans
Acinetobacter	baumannii
Acinetobacter	calcoaceticus
Acinetobacter	junii
Acinetobacter	wolfii
Actinobacillus	sp
Actinomyces	israelii
Actinomyces	meyeri
Actinomyces	odontolyticus
Actinomyces	sp
Aerococcus	viridans
Aeromonas	caviae
Aeromonas	hydrophilia
Aeromonas	sobria
Agrobacterium	radiobacter
Alcaligenes	denitrificans
Alcaligenes	faecalis
Alcaligenes	sp
Alcaligenes	xylosoxydans
Bacillus	sp
Bacteroides	bivius
Bacteroides	buccae
Bacteroides	caccae

Bacteroides	denticola
Bacteroides	disiens
Bacteroides	distasonis
Bacteroides	fragilis
Bacteroides	oralis
Bacteroides	oris
Bacteroides	ovatus
Bacteroides	stercoris
Bacteroides	thetaiotomicron
Bacteroides	uniformis
Bacteroides	ureolyticus
Bacteroides	vulgatus
Bifidobacterium	sp
Bordetella	bronchiseptica
Brucella	melitensis
Burkholderia	cepacia
Burkholderia	picketti
Burkholderia	pseudomallei
Campylobacter	coli
Campylobacter	fetus
Campylobacter	jejuni
Campylobacter	sp
Capnocytophaga	canimorsus
Capnocytophaga	ochracea
Capnocytophaga	sp
Chryseomonas	luteola
Citrobacter	amalonaticus
Citrobacter	braakii
Citrobacter	diversus
Citrobacter	freundii

Citrobacter	koseri
Citrobacter	sp
Clostridium	bifermentans
Clostridium	butyricum
Clostridium	clostridiiforme
Clostridium	paraputrificum
Clostridium	perfringens
Clostridium	ramosum
Clostridium	septicum
Clostridium	tertium
Clostridiumi	innocuum
Comamonas	acidovora
Corynebacterium	aquaticum
Corynebacterium	bovis
Corynebacterium	jeikeium
Corynebacterium	minutissimum
Corynebacterium	sp
Eikenella	corrodens
Empedobacter	brevis
Entereococcus	casseliflavus
Enterobacter	aerogenes
Enterobacter	agglomerans
Enterobacter	amnigenus
Enterobacter	cloacae
Enterococcus	avium
Enterococcus	durans
Enterococcus	faecalis
Enterococcus	faecium
Enterococcus	gallinarium
Enterococcus	raffinosus

Escherichia	coli
Eubacterium	aerofaciens
Eubacterium	lentum
Eubacterium	limosum
Flavobacterium	breve
Flavobacterium	meningosepticum
Flavobacterium	sp
Fusobacterium	sp
Fusobacterium	mortiferum
Fusobacterium	necrophorum
Fusobacterium	nucleatum
Fusobacterium	varium
Gardnerella	vaginalis
Gemella	haemolysans
Gemella	morbillorum
Gemella	sp
Haemophilus	aphrophilus
Haemophilus	influenzae
Haemophilus	parainfluenzae
Haemophilus	paraphrophilus
Hafnia	alvei
Kingella	sp
Klebsiella	ornithinolytica
Klebsiella	oxytoca
Klebsiella	ozaenae
Klebsiella	pneumoniae
Kluyvera	sp
Lactobacillus	acidophilus
Lactobacillus	catenaforme
Lactococcus	cremoris

Lactococcus	lactis
Legionella	pneumophila
Leptotrichia	buccalis
Leuconostoc	sp
Listeria	monocytogenes
Moraxella	catarrhalis
Moraxella	osloensis
Moraxella	phenylpyruvica
Moraxella	sp
Morganella	morganii
Mycobacterium	avium
Mycobacterium	genavense
Mycobacterium	tuberculosis
Mycobacterium	avium-intracellulare
Mycoplasma	sp
Myroides	odoratum
Neisseria	cinerea
Neisseria	flavescens
Neisseria	meningitidis
Neisseria	mucosa
Neisseria	sp
Neisseria	subflava
Nocardia	asteroides
Nocardia	sp
Ochrobactrum	anthropi
Pasteurella	multocida
Peptostreptococcus	anaerobius
Peptostreptococcus	asaccharolyticus
Peptostreptococcus	magnus
Peptostreptococcus	micros

Peptostreptococcus	prevotii
Prevotella	bivia
Prevotella	buccae
Prevotella	loescheii
Propionibacterium	acnes
Propionibacterium	granulosum
Proteus	mirabilis
Proteus	penneri
Proteus	vulgaris
Providencia	rettgeri
Providencia	sp
Providencia	stuartii
Pseudomonas	aeroginosa
Pseudomonas	alcaligenes
Pseudomonas	diminuta
Pseudomonas	fluorescens
Pseudomonas	paucimobilis
Pseudomonas	putida
Pseudomonas	sp
Pseudomonas	stutzeri
Pseudomonas	vesicularis
Salmonella	enteritidis
Salmonella	paratyphi
Salmonella	typhi
Salmonella	typhimurium
Serratia	fonticola
Serratia	marcescens
Serratia	odorifera
Serratia	sp
Shigella	dysenteria

Shigella	flexneri
Shigella	sonnei
Sphingomonas	paucimobilis
Staphylococcus	aureus
Staphylococcus	auricularis
Staphylococcus	capitis
Staphylococcus	caprae
Staphylococcus	chromogenes
Staphylococcus	cohnii
Staphylococcus	epidermidis
Staphylococcus	haemolyticus
Staphylococcus	hominis
Staphylococcus	intermedius
Staphylococcus	kloosii
Staphylococcus	lugdunensis
Staphylococcus	saccharolyticus
Staphylococcus	saprophyticus
Staphylococcus	sciuri
Staphylococcus	simulans
Staphylococcus	warneri
Staphylococcus	xylosus
Stenotrophomonas	maltophilia
Stomatococcus	mucilaginosus
Streptococcus	acidiminimus
Streptococcus	adjacens
Streptococcus	agalactiae
Streptococcus	anginosus
Streptococcus	bovis
Streptococcus	canis
Streptococcus	constellatus

Streptococcus	cremoris
Streptococcus	crista
Streptococcus	defectivus
Streptococcus	dysgalactiae
Streptococcus	equinus
Streptococcus	equisimilis
Streptococcus	intermedius
Streptococcus	lactis
Streptococcus	mitis
Streptococcus	mutans
Streptococcus	oralis
Streptococcus	pneumoniae
Streptococcus	pyogenes
Streptococcus	salivarius
Streptococcus	sanguis
Streptococcus	alpha-hemolyticus
Streptococcus	beta-hemolyticus
Veillonella	parvula
Veillonella	sp
Yersinia	enterocolitica

5. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1—4~~, wherein the immobilized specific recognition elements are selected from the group comprising, e.g., natural and synthetically fabricated polynucleotides, polynucleotides with artificial bases and / or artificial carbohydrates, peptides, peptide nucleic acids ("PNA"s), PNA's with artificial bases, LNAs, proteins (e.g. antibodies), ribozymes, and aptamers.

6. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1—4~~, wherein the immobilized specific recognition elements are selected from the group of antibiotics-based recognition elements comprising, e.g., macrolide antibiotics (e.g. erythromycin, azithromycin, streptogramin), aminoglycoside antibiotics (e.g. neomycin, paromomycin, lividomycin, gentamycin), and peptide antibiotics (e.g. thiostreptone, micrococcin).

7. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1—4~~, for the simultaneous determination of one or more different bacterial 16S-rRNA in a liquid sample,

comprising

- an evanescent field measurement platform, e.g. an optical waveguide, as a solid carrier and
- a plurality of polynucleotides immobilized in discrete measurement areas of known location forming an array of measurement areas on said evanescent field measurement platform,

wherein

- a multitude (i.e. 2 or more) of different polynucleotides is immobilized in discrete measurement areas for the detection of each different 16S-rRNA, the sequences of the immobilized polynucleotides being essentially complementary to different subsequences of the 16S-rRNA to be detected, which are not directly adjacent and not overlapping in the sequence of said 16S-rRNA, and
- and said analytical chip is operable for the detection of 16S-rRNA in the evanescent field of the evanescent field measurement platform, without an amplification (e.g. by polymerase chain reaction PCR or linear amplification "T7") of the polynucleotide sequences contained in the sample.

Claims 8-10 (Canceled)

11. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 6~~, wherein the plurality of immobilized specific recognition elements comprises less than 10~~, preferably less than 5~~ different specific recognition elements which can bind specifically to different subsequences of the same bacterial 16S-rRNA to be detected.

12. (Currently Amended) An analytical chip according to claim 7 ~~any of claims 7 – 10~~, wherein the sequences of the multitude of immobilized polynucleotides for detection of a 16S-rRNA are essentially complementary to subsequences indicative for the genus of the bacterium from which said 16S-rRNA to be detected has been derived.

13. (Currently Amended) An analytical chip according to claim 7 ~~any of claims 7 – 10~~, wherein the sequences of the multitude of immobilized polynucleotides for detection of a 16S-rRNA are essentially complementary to subsequences indicative for the species and / or strain of the bacterium from which said 16S-rRNA to be detected has been derived.

14. (Currently Amended) An analytical chip according to claim 7 ~~any of claims 7 – 10~~, wherein the multitude of immobilized polynucleotides for detection of a 16S-rRNA comprises both polynucleotides with a sequence essentially complementary to subsequences indicative for the genus type and polynucleotides with a sequence essentially complementary to the species and / or strain of the bacterium from which said 16S-rRNA to be detected has been derived.

15. (Currently Amended) An analytical method according to claim 1 ~~any of claims 1 – 14~~, wherein the liquid sample comprises a complex biological matrix of the group of human and animal cell extracts, extracts of human and animal tissue, such as organ, skin or bone tissue, and of body fluids or their components, such as blood, serum, plasm, lymph, synovia, tear liquid, sweat, milk, sperm, sputum, cerebral spinal fluid, gastric juice, intestinal contents, urine, and stool.

16. (Canceled)

17. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 14~~, wherein the evanescent field measurement platform comprises an optical waveguide, which is continuous or partitioned into discrete waveguiding areas.

18. (Original) An analytical chip according to claim 17, wherein the optical waveguide is an optical film waveguide with a first optically transparent layer (a) on a second optically transparent layer (b) with lower refractive index than layer (a).

Claims 19-24. (Canceled)

25. (Currently Amended) An analytical chip according to claim 18 ~~any of claims 18 – 23~~, wherein in-coupling of excitation light into the optically transparent layer (a), to the measurement areas, is performed using one or more grating structures (c), that are formed in the optically transparent layer (a).

Claims 26-29. (Canceled)

30. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 29~~, wherein an adhesion-promoting layer (f), with a thickness of preferably less than 200 nm, more preferably of less than 20 nm, is deposited on the optically transparent layer (a), for immobilization of the specific recognition elements, and wherein the adhesion-promoting layer preferably comprises chemical compounds of the group comprising, e.g., silanes, epoxides, functionalized, charged or polar polymers and "self-organized passive or functionalized mono- or multilayers", alkyl phosphates or alkyl phosphonates, and multifunctional block copolymers, such as poly(L)lysine / polyethylene glycols.

Claims 31-34. (Canceled)

35. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 34~~, wherein the measurement areas are provided at a density of more than 10~~, preferably of more than 100, most preferably of more than 1000~~ measurement areas per square centimeter.

36. (Currently Amended) An analytical chip according to claim 1 ~~any of claims 1 – 34~~, wherein the surface with the discrete measurement areas with immobilized specific recognition elements forms the inner bottom surface of one or more sample compartments for receiving one or more samples to be analyzed for 16S-rRNA.

Claims 37-41. (Canceled)

42. (Original) An analytical method for the simultaneous determination of one or more different bacterial 16S-rRNA in a liquid sample, comprising providing an analytical chip comprising

- an evanescent field measurement platform, e.g. an optical waveguide, as a solid carrier and
- a plurality of specific recognition elements immobilized in discrete measurement areas of known location forming an array of measurement areas on said evanescent field measurement platform,

wherein

- a multitude (i.e. 2 or more) of different specific recognition elements is immobilized in discrete measurement areas for the recognition and detection of each different 16S-rRNA, different recognition elements being specific for different subsequences of the 16S-rRNA to be detected, which are not directly adjacent and not overlapping in the sequence of said 16S-rRNA,
- a liquid sample, not being subjected to an amplification (e.g. by polymerase chain reaction PCR or linear amplification "T7") of the polynucleotide sequences contained therein, is brought into contact with the array under conditions allowing for binding (respectively hybridization) of 16S-rRNA contained in the sample

with the corresponding specific recognition elements immobilized in the measurement areas

- changes of electro-optical signal caused by a successful binding on the measurement areas of the evanescent field measurement platform are measured with one or more detectors, and
- the presence of a bacterium to be detected is determined from the whole of signals from those measurement areas occupied by immobilized specific recognition elements dedicated for the specific detection of said bacterium.

43. (Currently Amended) An analytical method according to claim 42, wherein said analytical method is operable for a simultaneous quantitative determination of one or more different bacterial 16S-rRNA in a liquid sample~~, i.e. with an experimental variation of less than 50 %, preferably of less than 20 %, most preferably of less than 10 %.~~

44. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42 – 43~~, wherein said analytical method is operable for a simultaneous quantitative determination of the amount respectively concentration of the one or more different bacteria in the original sample from where the liquid sample containing said one or more different 16S-rRNA have been derived.

45. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42 – 44~~, wherein the one or more bacterial 16S-rRNA to be detected are derived from bacteria selected from the group comprising, e.g.:

Genus	**Species**
Achromobacter	xylosoxidans
Acinetobacter	baumannii
Acinetobacter	calcoaceticus
Acinetobacter	junii
Acinetobacter	wolfii
Actinobacillus	sp

Actinomyces	israelii
Actinomyces	meyeri
Actinomyces	odontolyticus
Actinomyces	sp
Aerococcus	viridans
Aeromonas	caviae
Aeromonas	hydrophilia
Aeromonas	sobria
Agrobacterium	radiobacter
Alcaligenes	denitrificans
Alcaligenes	faecalis
Alcaligenes	sp
Alcaligenes	xylosoxydans
Bacillus	sp
Bacteroides	bivius
Bacteroides	buccae
Bacteroides	caccae
Bacteroides	denticola
Bacteroides	disiens
Bacteroides	distasonis
Bacteroides	fragilis
Bacteroides	oralis
Bacteroides	oris
Bacteroides	ovatus
Bacteroides	stercoris
Bacteroides	thetaiotomicron
Bacteroides	uniformis
Bacteroides	ureolyticus
Bacteroides	vulgatus
Bifidobacterium	sp

Bordetella	bronchiseptica
Brucella	melitensis
Burkholderia	cepacia
Burkholderia	picketti
Burkholderia	pseudomallei
Campylobacter	coli
Campylobacter	fetus
Campylobacter	jejuni
Campylobacter	sp
Capnocytophaga	canimorsus
Capnocytophaga	ochracea
Capnocytophaga	sp
Chryseomonas	luteola
Citrobacter	amalonaticus
Citrobacter	braakii
Citrobacter	diversus
Citrobacter	freundii
Citrobacter	koseri
Citrobacter	sp
Clostridium	bifermentans
Clostridium	butyricum
Clostridium	clostridiiforme
Clostridium	paraputrificum
Clostridium	perfringens
Clostridium	ramosum
Clostridium	septicum
Clostridium	tertium
Clostridiumi	innocuum
Comamonas	acidovora
Corynebacterium	aquaticum

Corynebacterium	bovis
Corynebacterium	jeikeium
Corynebacterium	minutissimum
Corynebacterium	sp
Eikenella	corrodens
Empedobacter	brevis
Entereococcus	casseliflavus
Enterobacter	aerogenes
Enterobacter	agglomerans
Enterobacter	amnigenus
Enterobacter	cloacae
Enterococcus	avium
Enterococcus	durans
Enterococcus	faecalis
Enterococcus	faecium
Enterococcus	gallinarium
Enterococcus	raffinosus
Escherichia	coli
Eubacterium	aerofaciens
Eubacterium	lentum
Eubacterium	limosum
Flavobacterium	breve
Flavobacterium	meningosepticum
Flavobacterium	sp
Fusobacterium	sp
Fusobacterium	mortiferum
Fusobacterium	necrophorum
Fusobacterium	nucleatum
Fusobacterium	varium
Gardnerella	vaginalis

Gemella	haemolysans
Gemella	morbillorum
Gemella	sp
Haemophilus	aphrophilus
Haemophilus	influenzae
Haemophilus	parainfluenzae
Haemophilus	paraphrophilus
Hafnia	alvei
Kingella	sp
Klebsiella	ornithinolytica
Klebsiella	oxytoca
Klebsiella	ozaenae
Klebsiella	pneumoniae
Kluyvera	sp
Lactobacillus	acidophilus
Lactobacillus	catenaforme
Lactococcus	cremoris
Lactococcus	lactis
Legionella	pneumophila
Leptotrichia	buccalis
Leuconostoc	sp
Listeria	monocytogenes
Moraxella	catarrhalis
Moraxella	osloensis
Moraxella	phenylpyruvica
Moraxella	sp
Morganella	morganii
Mycobacterium	avium
Mycobacterium	genavense
Mycobacterium	tuberculosis

Mycobacterium avium-intracellulare
Mycoplasma sp
Myroides odoratum
Neisseria cinerea
Neisseria flavescens
Neisseria meningitidis
Neisseria mucosa
Neisseria sp
Neisseria subflava
Nocardia asteroides
Nocardia sp
Ochrobactrum anthropi
Pasteurella multocida
Peptostreptococcus anaerobius
Peptostreptococcus asaccharolyticus
Peptostreptococcus magnus
Peptostreptococcus micros
Peptostreptococcus prevotii
Prevotella bivia
Prevotella buccae
Prevotella loescheii
Propionibacterium acnes
Propionibacterium granulosum
Proteus mirabilis
Proteus penneri
Proteus vulgaris
Providencia rettgeri
Providencia sp
Providencia stuartii
Pseudomonas aeroginosa

Pseudomonas	alcaligenes
Pseudomonas	diminuta
Pseudomonas	fluorescens
Pseudomonas	paucimobilis
Pseudomonas	putida
Pseudomonas	sp
Pseudomonas	stutzeri
Pseudomonas	vesicularis
Salmonella	enteritidis
Salmonella	paratyphi
Salmonella	typhi
Salmonella	typhimurium
Serratia	fonticola
Serratia	marcescens
Serratia	odorifera
Serratia	sp
Shigella	dysenteria
Shigella	flexneri
Shigella	sonnei
Sphingomonas	paucimobilis
Staphylococcus	aureus
Staphylococcus	auricularis
Staphylococcus	capitis
Staphylococcus	caprae
Staphylococcus	chromogenes
Staphylococcus	cohnii
Staphylococcus	epidermidis
Staphylococcus	haemolyticus
Staphylococcus	hominis
Staphylococcus	intermedius

Staphylococcus	kloosii
Staphylococcus	lugdunensis
Staphylococcus	saccharolyticus
Staphylococcus	saprophyticus
Staphylococcus	sciuri
Staphylococcus	simulans
Staphylococcus	warneri
Staphylococcus	xylosus
Stenotrophomonas	maltophilia
Stomatococcus	mucilaginosus
Streptococcus	acidiminimus
Streptococcus	adjacens
Streptococcus	agalactiae
Streptococcus	anginosus
Streptococcus	bovis
Streptococcus	canis
Streptococcus	constellatus
Streptococcus	cremoris
Streptococcus	crista
Streptococcus	defectivus
Streptococcus	dysgalactiae
Streptococcus	equinus
Streptococcus	equisimilis
Streptococcus	intermedius
Streptococcus	lactis
Streptococcus	mitis
Streptococcus	mutans
Streptococcus	oralis
Streptococcus	pneumoniae
Streptococcus	pyogenes

Streptococcus	salivarius
Streptococcus	sanguis
Streptococcus	alpha-hemolyticus
Streptococcus	beta-hemolyticus
Veillonella	parvula
Veillonella	sp
Yersinia	enterocolitica

46. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—45~~, wherein the immobilized specific recognition elements are selected from the group comprising, e.g., natural and synthetically fabricated polynucleotides, polynucleotides with artificial bases and / or artificial carbohydrates, peptides, peptide nucleic acids ("PNA"s), PNA's with artificial bases, LNAs, proteins (e.g. antibodies), ribozymes, and aptamers.

47. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—45~~, wherein the immobilized specific recognition elements are selected from the group of antibiotics-based recognition elements comprising, e.g., macrolide antibiotics (e.g. erythromycin, azithromycin, streptogramin), aminoglycoside antibiotics (e.g. neomycin, paromomycin, lividomycin, gentamycin), and peptide antibiotics (e.g. thiostreptone, micrococcin).

48. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—45~~, for the simultaneous determination of one or more different bacterial 16S-rRNA in a liquid sample, comprising providing an analytical chip comprising
    - an evanescent field measurement platform, e.g. an optical waveguide, as a solid carrier and

- a plurality of polynucleotides immobilized in discrete measurement areas of known location forming an array of measurement areas on said evanescent field measurement platform,

wherein

- a multitude (i.e. 2 or more) of different polynucleotides is immobilized in discrete measurement areas for the detection of each different 16S-rRNA, the sequences of the immobilized polynucleotides being essentially complementary to different subsequences of the 16S-rRNA to be detected, which are not directly adjacent and not overlapping in the sequence of said 16S-rRNA,
- a liquid sample, not being subjected to an amplification (e.g. by polymerase chain reaction PCR or linear amplification "T7") of the polynucleotide sequences contained therein, is brought into contact with the array under conditions allowing a hybridization of 16S-rRNA contained in the sample with essentially complementary polynucleotides immobilized in the measurement areas
- changes of electro-optical signal caused by a successful hybridization on the measurement areas of the evanescent field measurement platform are measured with one or more detectors, and
- the presence of a bacterium to be detected is determined from the whole of signals from those measurement areas occupied by immobilized polynucleotides dedicated for the specific detection of said bacterium.

Claims 49-51. (Canceled)

52. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42 – 47~~, wherein the plurality of immobilized specific recognition elements comprises less than 10~~, preferably less than 5~~ different specific recognition elements which can bind specifically to different subsequences of the same bacterial 16S-rRNA to be detected.

53. (Canceled)

54. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—53~~, wherein the bacterial 16S-rRNA to be detected is fragmented into strands of less than 500, preferably of less than 200 base pairs length.

55. (Canceled)

56. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—55~~, wherein the evanescent field measurement platform comprises an optical waveguide, which is continuous or partitioned into discrete waveguiding areas.

57. (Original) An analytical method according to claim 56, wherein the optical waveguide is an optical film waveguide with a first optically transparent layer (a) on a second optically transparent layer (b) with lower refractive index than layer (a).

58. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42—57~~, wherein the detection of the presence of bacterial 16S-rRNA is based on the change of one or more luminescences, preferably of one or more fluorescences.

59. (Original) An analytical method according to claim 58, wherein the luminescence (fluorescence) used for analyte detection is generated by luminescence (fluorescence) labels, which are bound to or associated with the 16S-rRNA to be detected.

60. (Canceled)

61. (Currently Amended) An analytical method according to claim 59 ~~any of claims 59—60~~, wherein said labels have excitation and emission wavelengths between 250 nm and 1100 nm.

62. (Currently Amended) An analytical method according to claim 59 ~~any of claims 59 - 61~~, wherein said luminescence labels are selected from luminescent, functionalized or intercalating dyes and luminescent, functionalized nanoparticles ("quantum dots").

63. (Canceled)

64. (Currently Amended) An analytical method according to claim 48 ~~any of claims 48 - 63~~, wherein a pattern of said changes of electro-optical signal caused by a successful hybridization of a multitude of immobilized polynucleotides, in different measurement areas, dedicated for the detection of one or more 16S-rRNA, ("sample hybridization pattern" of said 16S-rRNA) to be determined in a sample is established and recorded.

65. (Currently Amended) An analytical method according to claim 48 ~~claim 48 - 64~~, wherein a "reference hybridization pattern" is established and recorded by bringing a liquid sample containing a known amount of one or more different known 16S-rRNA into contact with said analytical chip under conditions allowing for hybridization between said known 16S-rRNA and the corresponding multitudes of complementary immobilized polynucleotides.

66. (Canceled)

67. (Currently Amended) An analytical method according to claim 65 ~~any of claims 65 - 66~~, wherein 16S-rRNA contained in a sample are determined by comparison of a sample hybridization pattern and one or more reference hybridization patterns, upon determining the degree of agreement between said sample hybridization pattern and said reference hybridization patterns.

68. (Currently Amended) An analytical method according to claim 67, wherein the degree of agreement between said sample hybridization pattern and said reference hybridization

patterns is determined by statistical methods and / or mathematical clustering methods and / or artificial neural networks.

Claims 69-70. (Canceled)

71. (Currently Amended) An analytical method according to claim 42 ~~any of claims 42 – 70~~, wherein a pattern of said changes of electro-optical signal caused by a successful binding of a multitude of immobilized specific recognition elements in different measurement areas, dedicated for the detection of one or more 16S-rRNA, ("sample binding pattern" of said 16S-rRNA) to be determined in a sample is established and recorded.

72. (Currently Amended) An analytical method according to claim 42 ~~claim 42 – 71~~, wherein a "reference binding pattern" is established and recorded by bringing a liquid sample containing a known amount of one or more different known 16S-rRNA into contact with said analytical chip under conditions allowing for binding between said known 16S-rRNA and the corresponding multitudes of complementary immobilized specific recognition elements.

73. (Canceled)

74. (Currently Amended) An analytical method according to claim 72 ~~any of claims 72 – 73~~, wherein 16S-rRNA contained in a sample are determined by comparison of a sample binding pattern and one or more reference binding patterns, upon determining the degree of agreement between said sample binding pattern and said reference binding patterns by statistical methods and / or mathematical clustering methods and / or artificial neural networks.

Claims 75-77. (Canceled)